

Commentary

Volunteering in West Africa

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A medical student or resident taking an elective or a physician thinking of volunteering might not know what to expect in a lesser-developed country. When deciding to work abroad, consideration should be given to licensing, immunizations, documentation, insurance, climate, political situation, and facilities.¹ Because firsthand accounts of medical practice in the Third World are few,²⁻⁶ I will describe my experience volunteering in West Africa and suggest some priorities for improving medical care.

In late 1989 and on a separate trip in 1990, I spent six weeks as a visiting surgeon at the Kamakwie Wesleyan Mission Hospital in rural northwestern Sierra Leone. In 1989 I spent two weeks at the Vanga Baptist Mission Hospital, about 320 km (200 mi) southeast of Kinshasa, the capital of Zaire. During this eight-week period, I did 82 major and minor surgical procedures (Table 1) and saw many tropical diseases and obstetric problems.

The Kamakwie Hospital has 68 beds and the Vanga Hospital more than 200. Both facilities are so-called bush hospitals because they are located in rural, extremely undeveloped communities with populations of less than 10,000. Road access to the nearest metropolitan center is difficult, and resources are limited. These "medical centers," however, draw upon hundreds of thousands of people, many walking from more than 320 km away. Both centers routinely accept fourth-year American medical students taking electives.

These hospitals try to be independent of outside financial support other than for expatriate staff. They usually operate profitably, despite fees (Table 2) that are a fraction of those in the United States. Profitability is possible because labor costs are low. The average West African nurse makes about \$10 (US) a month. Other medical personnel make less. Short-term medical volunteers usually pay for their room and board (about \$15 a day) and transportation and receive no pay for their services.

In West Africa, physicians will encounter such threatening diseases as the acquired immunodeficiency syndrome (AIDS), malaria, and hepatitis. Most of the long-term personnel I met had had malaria at one time or another, and a week after returning home from my first visit, I developed it.

The common language in Zaire and in much of West Africa is French; in Nigeria, Ghana, and Liberia, it is English; and in Sierra Leone, it is Krio—a variant of English. "Word turners" or translators are available when patients speak dialects. Many West African hospitals are located where French is spoken and require that their physicians speak French.

A typical day began at 5:45 AM when the church bell

tolled. After a cold shower—because there was no running hot water—we prepared for work. Each day ended about 10:00 PM when the power was cut off to conserve fuel for the electric generator. The hospitals saved many thousands of dollars a year this way, but we could not depend on electrically powered devices. Mechanical ventilators, suction apparatus, electrocardiographs, and other electrical equipment were not always available.

Seasonal variations in climate were small. Despite the long, hot, and humid days of work, we felt rested. Our diet was high in starch and low in protein. Mostly it was inexpensive imports, such as noodles and rice, combined with local lamb or chicken. We lacked telephones, newspapers, and television. Nearby towns had no restaurants or entertainment nor, for that matter, even electricity or running water. Our entertainment was one another and our work. Life seemed simpler, less stressful.

In a worldwide survey conducted by the American College of Surgeons,⁷ the West African states and Tanzania had the lowest number of surgeons per 100,000 people. A shortage of physicians in all specialties exists in West Africa, compounded by an extreme maldistribution of surgeons to the urban centers.⁸ Missionary physicians, who are typically family practitioners working in rural hospitals, carry the brunt of this surgical personnel maldistribution. Often the missionary physicians cannot cope with their operating case-load because it is too large, and multispecialty coverage is not nearby. A visiting surgical specialist, therefore, ordinarily has an opportunity to do a large number of surgical procedures in a short time. Even on brief visits, a surgeon or a family practitioner with surgical training can be of real service to staff and patients waiting for help. A sufficient number of visiting physicians is not available regularly.

My medical experiences in Africa were different from my work at home because of the variety and scope of surgical procedures I faced. I saw neurosurgical cases, orthopedic problems of unusual severity because of patient neglect, gynecologic and obstetric problems, and other major medical and surgical problems I seldom encountered in the United States (Table 1).

We saw so many hernias and hydroceles in Sierra Leone that a technician did these procedures to take a burden off the medical staff. Onchocerciasis was such a frequent cause of these problems that we often did skin biopsies to rule out this disease. Many hernias and hydroceles were of monstrous proportions requiring scrotal resections.

One patient, a man about 20 who had fallen from a palm tree some four months before, crawled and limped into Vanga

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from more than 320 km away with a complete break and nonunion of the right femur. I assisted a staff physician interested in orthopedics in doing open reduction using external pins. Many patients sought medical care months after compound fractures with osteomyelitis that required debridement and drainage of the bone. These patients often could not travel immediately to our centers after their injuries because of poor road networks.

Vesicovaginal fistulas were numerous because of unsupervised deliveries caused either by difficulties traveling or lack of education. These fistulas often became challenging surgical problems.

TABLE 1.—Major and Minor Surgical Procedures Done by Author in an 8-Week Period in West Africa

Procedure	No.
Head and Neck	
Caldwell-Luc	1
Cleft lip repairs	2
Deltoid-upper back flap (Bakamjian type) reconstruction of the posterior neck	1
Partial maxillectomy	1
Radical neck dissection	1
Neck exploration	1
Submaxillary gland resection	1
Thyroidectomy for goiter	3
Tonsillectomy	1
Tracheostomy	2
General Surgery	
Aneurysmectomy (false aneurysm of femoral artery)	1
Cholecystojejunostomy for biliary obstruction	2
Colon resection for inflammatory mass	1
Closure of perforated ulcer	1
Cystostomy	1
Exploratory laparotomy	4
Gastroenterostomy for obstructing gastric cancer	2
Radical groin dissection	1
Herniorrhaphy	
Ventral	1
Inguinal	3
Hydrocelectomy	
Simple	6
With scrotal resection	2
Mastectomy	
Simple	1
Modified radical	1
Orchidopexy	1
Orchiectomy	
Simple, for cancer of the prostate	1
With scrotal resections	3
Skin graft for tropical ulcer	2
Squamous cell carcinoma of the skin resection*	2
Gynecologic	
Cone biopsy of the cervix	1
Cesarean section	5
Destructive extraction of a fetus	1
Dilation and curettage	4
Hysterectomy	
Abdominal	2
Vaginal, for procidentia	2
Salpingo-oophorectomy	
Ectopic pregnancy	2
Ovarian tumors	2
Tuboplasty for infertility	1
Vaginal reconstruction (McIndoe)	1
Vesicovaginal fistula repair	
Simple	2
With vaginal flap	1
Miscellaneous	
Meningomyelocele repair	1
Incision and drainage	
For osteomyelitis	3
For tropical myositis	2
For rectal abscess	1
Syndactyly repair bilaterally	1

*Both resections were carried out in albinos.

During my eight weeks of service, I did not see any patients diagnosed with appendicitis, cholelithiasis, colon cancer, or lung cancer. One patient presented with a perforated gallbladder due to an inflammatory mass of unknown cause that obstructed the common bile duct. She required a cholecystojejunostomy, as did another patient who had a Courvoisier's gallbladder due to a stomach cancer. Two other patients required gastroenterostomies because of obstructing gastric carcinoma. This mix of operations was dissimilar to that reported from another West African bush hospital.⁹

Although visiting specialists will follow their interests and training, visiting general surgeons should be prepared to face a variety of surgical problems. Medical specialists also will be challenged by diverse problems.

Operating conditions were often uncomfortable. In Kamakwie, the operating room had air conditioning, but it was still so warm that a fan was needed to stay cool. In Vanga, because there was no air conditioning, we placed a fan as close to us as possible to avoid excessive sweating. Staying cool in the operating room became a challenge. Double gloving or wearing a rubber apron to lessen the chance of human immunodeficiency virus (HIV) transmission was usually impractical because of the heat.

At Kamakwie the operating surgeon administered anesthesia. We gave spinals for nearly all abdominal cases unless a patient was in shock. Otherwise, we gave short-acting ketamine hydrochloride without intubation. No nurses had training with inhalation anesthesia. At Vanga, where trained national nurses gave ether anesthesia with endotracheal intubation, we could do head and neck procedures more safely and easily.

Because of the need for economy, we used sutures conservatively by making instrument ties. Hand ties wasted materials, so we avoided them. We tried to get as many as 12 knots out of one suture strand—these were the “missionary ties.”

The operating rooms did not run as smoothly as back home. We used resterilized needles, bandages, and scalpel blades repeatedly. Equipment and supplies were lacking or malfunctioned. Often we improvised or accepted materials that were not our first choice.

We guessed at postoperative electrolyte replacement therapy because blood chemistry measurements were not available. The laboratories did not do culture and sensitivities, so

TABLE 2.—Fee Schedule for Common Operations at Kamakwie Wesleyan Hospital, Sierra Leone

Procedure	Approximate Cost, in US \$
Hernia	Repair, single 8.00
	Double 10.00
Hydrocele	Repair, single 8.00
	Double 10.00
Scrotal resection	Additional 4.30
	Elective 5.00
Dilation and curettage	Elective 4.75
	Emergency 5.50
Laparotomy	Emergency 7.33
	Ectopic 8.00
	Hysterectomy 13.33
Prostatectomy	16.66
Vesicovaginal fistula repair	10.00
Tuboplasty	20.00

antibiotic therapy was also guesswork. Blood was typed but not crossmatched or checked for HIV. Outdated x-ray equipment limited examinations essentially to only the chest and long bones. We resorted to "tropical ultrasounds"—quick exploratory laparotomies—to make diagnoses.

Because one purpose of mission work is to help spread Christianity, physicians volunteering at a mission hospital must expect some religious exposure. Protestant chapel services were held every morning and prayers said before every operation in both centers.

My medical experiences broadened. Like other visiting physicians, I saw disease processes that are unusual in North America.¹⁰ Two patients, a child and a man, presented with spinal cord paralysis from tuberculosis (Pott's disease). Hepatomegaly or splenomegaly was present in almost every patient. Splenomegaly meant malaria, and hepatomegaly usually meant schistosomiasis, not alcoholic cirrhosis.

In Zaire, the staff had diagnosed 22 new cases of AIDS on average each month for the preceding half year. One physician had seen about 1,000 cases in a five-year period in this isolated area. In contrast, in rural northwestern Sierra Leone, AIDS had not yet become common.

We could differentiate the patients with tuberculosis from those with AIDS only by testing. Many AIDS patients had tuberculosis or symptoms that mimicked other diseases. Limited resources prevented our treating patients who had AIDS and tuberculosis together.

Infectious diseases, many preventable by immunizations, abounded. I saw more than a dozen children die of meningitis, complications of measles, anthrax, and tetanus. Many adults with typhoid died. Polio crippled children. In addition to the problems caused by onchocerciasis, neglected orthopedic injuries, and complications of childbirth, a major obstacle to improved medical care in West Africa was the lack of sufficient preventive medicine, public education, and good transportation.

Data on prevention were not readily available or were

kept haphazardly at both centers. Our efforts to immunize were minimal and consisted entirely of occasional efforts to vaccinate children in outlying villages. The first priority for offering better medical care in West Africa should be to send teams into villages specifically to provide vaccinations and information about sanitation. Because ultimately adequate health care systems must become independent of expatriate skills, training health teams is a corollary priority.

Although intervention by a visiting physician may not make much difference overall in the medical care in West Africa unless the problems of vaccinations and preventive care are solved, American physicians, medical students, or residents taking such an elective can enjoy the challenge of short-term volunteer work where so many medical problems occur that differ from those seen in developed nations. Some surgical training is important, but there are still many opportunities for medical personnel without surgical skills to improve medical care in lesser-developed regions.

Volunteers can contribute much and learn more. If physicians are interested in foreign service in West Africa or other lesser-developed areas, they should consult the article, "Directory Lists Overseas Service Opportunities for Physician Volunteers."¹¹

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